Volunteer Lake Assessment Program Individual Lake Reports

STOCKER POND, GRANTHAM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,253	**Max. Depth (m):**	5.8	**Flushing Rate (yr^{1})**	3.5
Surface Area (Ac.):	64	**Mean Depth (m):**	2.7	**P Retention Coef:**	0.56
Shore Length (m):	2,600	**Volume (m^{3}):**	697,000	**Elevation (ft):**	1019

TROPHIC CLASSIFICATION

Year	Trophic class
1983	MESOTROPHIC
2001	MESOTROPHIC

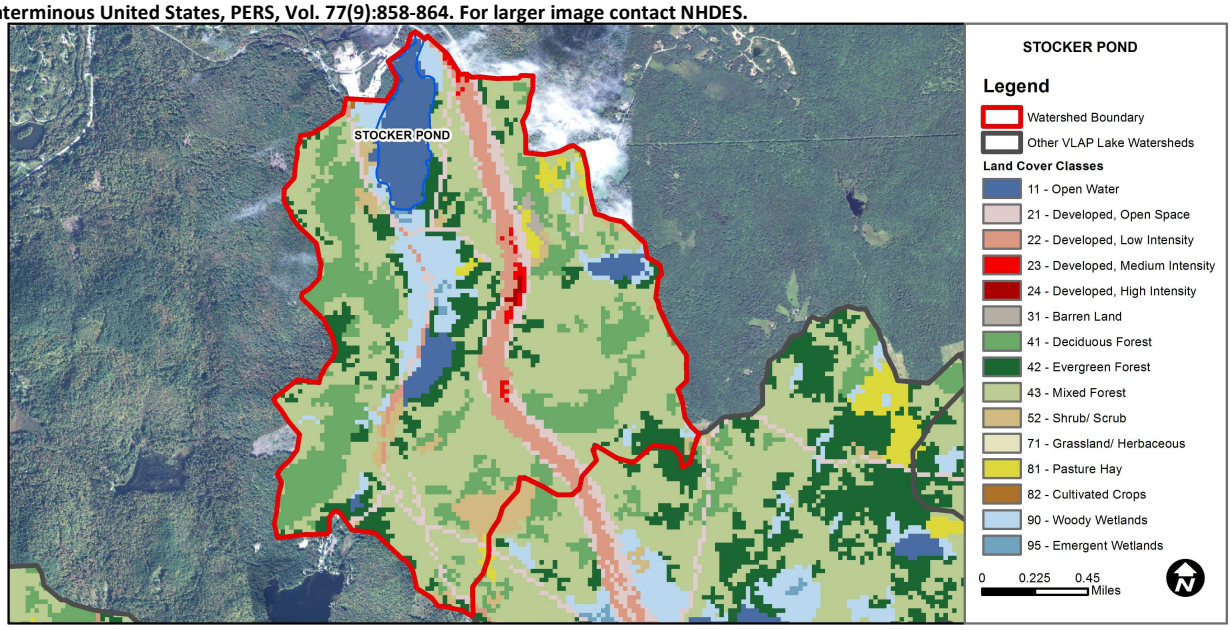
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Very Good	At least 10 samples with 0 exceedances of criteria.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Encouraging	>2 samples exist that are > 75% of geometric mean criteria, but not enough samples to calculate geomertic mean. No single sample exceedances. More data needed.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.

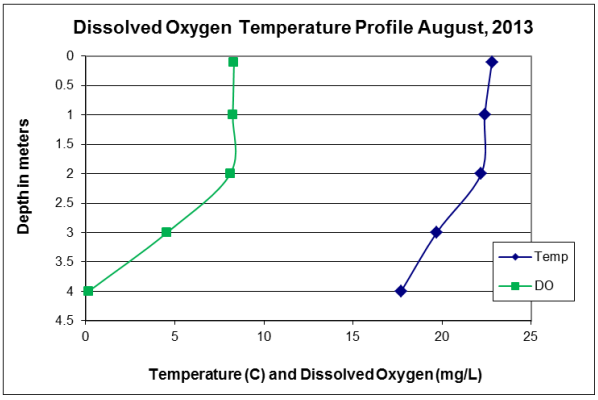


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	6.8	Barren Land	0.38	Grassland/Herbaceous	0
Developed-Open Space	5.6	Deciduous Forest	18.47	Pasture Hay	1.25
Developed-Low Intensity	5.65	Evergreen Forest	9.99	Cultivated Crops	0.07
Developed-Medium Intensity	0.59	Mixed Forest	41.32	Woody Wetlands	6.42
Developed-High Intensity	0.13	Shrub-Scrub	3.17	Emergent Wetlands	0.24

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
STOCKER POND, GRANTHAM, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low in June but were elevated in August and average chlorophyll levels increased from 2012. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity were elevated and much greater than the state median. Chloride and conductivity levels in Culvert 20 decreased greatly from those measured in 2010 and 2011. Chloride and conductivity have fluctuated greatly in Culvert 20 and may be due to groundwater influences. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began.
- **E. COLI:** Inlet E. coli levels were well below the state standard for surface waters.
- **TOTAL PHOSPHORUS:** Average epilimnetic phosphorus increased from 2012, however remained below the state median. Hypolimnetic phosphorus was elevated in August, turbidity was also elevated and dissolved oxygen levels approached zero mg/L. This indicates that internal phosphorus loading may occur in the late summer. Tributary phosphorus levels were relatively low in June and August. Historical trend analysis indicates stable epilimnetic phosphorus with low variability between years.
- **TRANSPARENCY:** Average transparency was slightly lower than 2012 likely due to the increased algal growth. Historical trend analysis indicates a significantly decreasing (worsening) transparency since monitoring began.
- **TURBIDITY:** Hypolimnetic turbidity was slightly elevated in June and elevated in August. The depletion of dissolved oxygen likely caused the release of organic compounds, including phosphorus, into the hypolimnion. Epilimnetic phosphorus was slightly elevated in June and may have been caused by stormwater runoff from recent storm events or pollen.
- **PH:** Deep spot pH levels were less than desirable range 6.5 – 8.0 units in June.
- **DISSOLVED OXYGEN:** Hypolimnetic dissolved oxygen was depleted to below 1.0 mg/L in August. This could result in the release of phosphorus and other organic compounds from the lake sediments.
- **RECOMMENDED ACTIONS:** Historical epilimnetic phosphorus tends to increase in years with significant storm events and above average precipitation. Stormwater runoff likely contributes nutrients from a variety of non-point sources including fertilizers, shoreline, bank and dirt road erosion, and agriculture. It is important to educate lake, watershed and local government about reducing the impacts of stormwater runoff through implementing best management practices. A good resources for the residents is DES' "Homeowner's Guide to Stormwater Management".



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Table 1. 2013 Average Water Quality Data for STOCKER POND

Station Name	Alk.	Chlor-a	Chloride	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	#/100ml	ug/l	m		ntu	
							NVS	VS		
Culvert 20			11	89.8		8			1.63	6.97
Epilimnion	12.4	6.97		172.8		11	2.13	2.80	1.25	6.75
Hypolimnion				193.4		21			6.00	6.46
Inlet				176.6	10	8			0.94	6.69
Outlet				172.4		12			1.27	6.92

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Degrading	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
Conductivity	Degrading	Data significantly increasing.	Transparency	Degrading	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.